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Courses » Introduction to Mechanical Vibration Announcements **Course** Ask a Question Progress

Unit 3 - Week 2

Course outline

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Week 2 Assignment

The due date for submitting this assignment has passed. **Due on 2018-02-21, 23:59 IST.**
As per our records you have not submitted this assignment.

This assignment contains 15 questions, 5 questions of 1 mark each and 10 questions of 2 marks each. Full marks are 25.

1) Which of the following type of viscous damping will give periodic motion to the vibrating body. ***1 point***

- Under damping
- Critical damping
- Overdamping
- none

No, the answer is incorrect.
Score: 0

Accepted Answers:
Under damping

2) What will be the natural frequency (in Hz) of the system shown in the figure below? Given: k1=5 N/mm and k2=8N/mm. ***1 point***

- 6.74
- 5.74
- 7.45
- 4.54

No, the answer is incorrect.
Score: 0

Accepted Answers:
5.74

3) A free overdamped system________. ***1 point***

- Does not vibrate at all
- Vibrates with frequency more than the natural frequency of system
- Vibrates with frequency less than the natural frequency of system
- Vibrates with frequency equal than the natural frequency of system

No, the answer is incorrect.
Score: 0

Accepted Answers:
Does not vibrate at all

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4) The equation of free vibrations as a system is $5\ddot{x} + 125x = 0$. Its natural frequency (in rad/sec) is *1 point*

- 6
- 25
- 5
- 5π

No, the answer is incorrect.
Score: 0

Accepted Answers:
5

5) In Coulomb damping, the amplitude of motion is reduced in each cycle by *1 point*

- $(\mu N)/K$
- $(2\mu N)/K$
- $(4\mu N)/K$
- $(3\mu N)/K$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$(4\mu N)/K$

6) As compared to the natural frequency of a simple pendulum on the earth, its natural frequency on the moon (given: $g_{moon} = g_{earth}/6$) will be *2 points*

- Reduced to 59.18%
- Reduced to 80.18%
- Reduced to 40.82%
- Increased to 40.82%

No, the answer is incorrect.
Score: 0

Accepted Answers:
Reduced to 40.82%

7) The Equation of motion for a damped viscous vibration is $3\ddot{x} + 9\dot{x} + 27x = 0$.. The damping factor is *2 points*

- 0.25
- 0.50
- 0.75
- 1.00

No, the answer is incorrect.
Score: 0

Accepted Answers:
0.50

8) Select the correct arrangement from the following information. *2 points*

(P) Viscous damping	(1) Dry Friction
(Q) Coulomb damping	(2) Microscopic slip
(R) Structural damping	(3) Flow through orifice
(S) Interfacial damping	(4) Internal friction of molecules

- P3, Q2, R4, S1
- P1, Q2, R3, S4
- P3, Q1, R4, S2

- P4, Q2, R1, S3

No, the answer is incorrect.
Score: 0

Accepted Answers:
P3, Q1, R4, S2

9) A single degree of freedom system as shown in figure consists of a massless bar AB hinged at A and a mass of 2 kg at end B and spring constant, $k_1 = k_2 = 200$ N/m. The natural frequency of vibration of the system in rad/s is **2 points**

- 11.18
- 12.18
- 14.81
- 13.81

No, the answer is incorrect.
Score: 0

Accepted Answers:
11.18

10) For the system shown in figure, the cantilever beam has flexural rigidity EI, the time period of oscillation is **2 points**

- $2\pi\sqrt{(m/k)}$
- $1/2\pi\sqrt{((ml^3)/(kl^3+3EI))}$
- $2\pi\sqrt{m(Kl^3+3EI)/3EIk}$
- $2\pi\sqrt{(Kl^3+3EI)/ml^3}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$2\pi\sqrt{m(Kl^3+3EI)/3EIk}$

11) A mass of 1 kg is attached to the end of a spring with stiffness 0.7 N/mm and damping provided is only 20% of the critical value. The frequency of damped vibration in (rad/s) is. **2 points**

- 19.99
- 22.29
- 26.92
- 25.92

No, the answer is incorrect.
Score: 0

Accepted Answers:
25.92

12) A vibratory system in a vehicle is to be designed with the following parameters:
K=100 N/m, C = 2 N-sec/m, m=1kg. The amplitude ratio from its starting value after three complete oscillations is ______ **2 points**

- 5.52
- 6.62
- 4.26
- 2.25

No, the answer is incorrect.
Score: 0

Accepted Answers:
6.62

13) In a damped spring-mass system, if the mass is halved and the spring stiffness is doubled, the logarithmic decrement is *2 points*

- Halved
- Doubled
- Unchanged
- Quadrupled

No, the answer is incorrect.
Score: 0

Accepted Answers:
Unchanged

14) A disc of mass m is attached to a spring of stiffness k as shown in the figure, the disc rolls without slipping on a horizontal surface. The natural frequency of the system is *2 points*

- $1/2\pi\sqrt{(k/m)}$
- $1/2\pi\sqrt{((2k)/m)}$
- $1/2\pi\sqrt{((2k)/3m)}$
- $1/2\pi\sqrt{((3k)/2m)}$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$1/2\pi\sqrt{((2k)/3m)}$

15) A vibrating system has the spring of stiffness 32N/m and mass 2 kg. If the system is having a damper, whose damping coefficient is 8N-s/m. The system is *2 points*

- Over damped system
- Under damped system
- Critical damped system
- Undamped system

No, the answer is incorrect.
Score: 0

Accepted Answers:
Under damped system

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